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ABSTRACT

If the profession of architecture is to become knowledge-based, architectural variables as stimuli must be amenable to simulation that is cheap, flexible, transportable, reduced in size, and valid in terms of responses elicited by "real" construction. Forty-four publications relating to these considerations are listed in this bibliography. (Author/MLF)

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ARCHITECTURAL SIMULATION: A Mini-bib

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ARCHITECTURAL SIMULATION -- A MINI-BIB

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If architecture -- -- defined as "the design of environments at human scale" -- -- survives as a profession, it will be because it has access to a body of empirical knowledge often established by controlled experimentation. Unfortunately, like foreign policy, architecture is antipathetic to experimentation . . . and its practitioners often share that antipathy. Grounds for the difficulty are extensive. (a) Experimental environments at full scale are excessively costly, so much so that owners of real buildings are most reluctant to experiment with them. (b) Experimental environments at full scale are so bulky that users or judges must be transported to them, rather than varying stimuli being assembled for the judges. (c) Experimental environments are so complex that at full scale single variables are difficult to manipulate without confounding, and the natural and social surrounds of full-scale representation almost never can be controlled. (d) Effects of built environments may vary from short to long time and between diverse population, whether composed of owners or lenders, occupants or inhabitants, visitors or customers, and the rest of us who merely have to live with and look at edifices in our surrounds.

Thus, if the profession of architecture is to become knowledge-based, architectural variables as stimuli must be amenable to simulation which is cheap, flexible, transportable, reduced in size and -- -- above all -- -- valid in terms of responses elicited by "real" constructions.

This is not news to architects -- -- they have been using models, photographs, drawings, plans and elevations as simulations since the profession began. Great commissions (e.g., the Sydney Opera House) and gold medals (e.g., the triennial Massey Awards in Canada) are awarded among competitors on the basis of simulations and representations they submit. Issues of validity almost always arise, however, not only in terms of evaluative procedures in such competitions but also in terms of the simulations themselves. Architectural photography and rendering, for example, are applied arts demanding high skill which probably contribute to the selection of this or that submission. Even architectural plans can mislead, insofar as the judge sees a complete floor layout entirely different from the "mental map" likely to be developed by the user of a real building. Architects, of course, pooh-pooh the likelihood of their being misled by artifactual characteristics of design simulation; they tend to assert that just as a radiologist can validly "read" an x-ray despite its distortions and vagueness, so the experienced architect can "cut through" the artifice of photographs, renderings or models to see the essential qualities of an environment that will be manifest after it has been built. This proposition of the architect's skill at "reading" simulations validly has not been tested experimentally, although we do know that design students tend to view architectural representations differently from laymen (e.g., Hershberger, 1968; Collins, 1969; Canter, 1970; Viehhauer, 1965); we know more generally that similar stimulus representations elicit differing responses from different cultures (Osgood, Archer and Miron, 1963).

Various representations of designed spaces as stimuli have been described and used empirically by Appleyard, 1971; Carlstam, 1968;

Carr and Schissler, 1969; Lowenthal, 1967; Michelson, 1966; Ratter and Hibb, 1969; Rose and Pierce, 1966; and Vigier, 1965, among others. Theoretical issues with perception of simulations as stimuli have been the concerns of many people like Arnoult, 1960; Canter, 1969; A & B, 1970; T. F. W. M. Heath, 1966; Harrison, 1969; Michels and Zisne, 1965; and Gauthier as far back as 1926. Broader issue in (architectural) evaluation methodology are exposed cogently in a variety of works of which those by Brunswick, Hull and Lewin, 1943; Creick, 1968 and 1970; Rosenthal, 1966; Webb et al, 1966; and Wohlwill, 1966, are representative. However, only a relative small number of studies have undertaken specifically to examine how comparison between changing simulations of an architectural "event" can change or even reverse response patterns; these include studies reported by Bennett, 1969; Dosey and Meisel, 1969; Heath, T.H., 1968; Galvin, 1970; Hesselgren, 1967; Manning, 1965; Lycan and Sewell, 1968; Lau, 1970 A & B; Petersen, Woodman and Eaton, 1968; Seaton and Collins, 1971; Smith, Smith & Hubbard, 1958; and Wools, 1970. No doubt there are many more direct comparisons between different means of showing congruencies and distortions in responses gained under varying architectural stimulus representation conditions; the author of this bibliography will be grateful to all readers who detect serious omissions in the above list. Valuable in this regard are reports like that of Sanoff, who discovered that models and drawings, of experimental homes for farm workers were well liked in a San Joaquin Valley small town but the real buildings based on the models were scorned. Surely the survival and growth of architecture as a profession depends on being able confidently to predict in vivo responses to the extent that results of experiments in vitro with alternative simulated designs can validly predict in vivo responses of users after designed environments are built.

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